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November 12, 1971

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
PURCHASE DESCRIPTION

CABLE FAULT LOCATOR

1. SCOPE

1.1 Scope.- This purchase description sets forth the requirements for lightweight portable equipment used for locating faults in buried electrical cable, and for locating and tracing the depth and path of the cable.

2. APPLICABLE DOCUMENTS

2.1 None

3. REQUIREMENTS

3.1 Equipment to be furnished by the contractor.- Each item of equipment furnished by the contractor shall be a Buried Cable Fault Locator, Railway Communications, Inc., Rycom Model 2785 or equal, together with all additional requirements included in this purchase description. Each item of equipment furnished shall include two instruction books, carrying case/s and all accessories necessary to perform the established and other required functions of the fault locator. Weight and bulk of the entire package shall be such that it may be easily carried by one person.

3.1.1 Batteries.- All batteries required for independent operation of the faultfinder assembly shall be furnished with each assembly.

3.2 Main and required characteristics.

3.2.1 Device assembly.- Commercially approved components shall be employed in the transmitter, receiver and accessories of the faultfinder assembly.

3.2.2 Device components.- The complete fault locator shall consist of a minimum of the following items:

(a) Transmitter

(b) Receiver (complete with accessories required to locate cable location, depth, and/or fault). This item may consist of more than one unit of equipment to meet requirements of this purchase description.

3.2.3 Transmitter.- The transmitter shall have a minimum of the following characteristics:

(a) Be capable of generating a signal suitable for use in detecting cable faults by the receiver elements. The signal shall be a pulsed type and at a frequency widely separated from 60 Hz and 60 Hz harmonics.

(b) Shall normally operate on self-contained batteries but shall be operable on an external power source per 3.2.3f.

(c) Its range of operation shall be effective up to three miles of underground cable with steel tape armor, buried in the earth or installed in duct, up to thirty-six inches deep.

(d) The circuitry shall employ solid-state devices where the commercial state-of-the-art is applicable.

(e) It shall have the capability for selectively matching the transmitter signal to nominal characteristics of the cable under test.

(f) Connections shall be available for operation of the transmitter from an external 12 volt DC source such as a vehicle battery. When used, such connections shall automatically disconnect the circuit of the self-contained transmitter battery. A minimum six foot long cable equipped with heavy duty, polarity marked battery clips and appropriate transmitter connections shall be supplied with the faultfinder assembly. Any necessary precautions in the use of an external power source shall be included and emphasized in the instructions covering operation of the transmitter (3.2.5d).

3.2.4 Receiver.- In response to the signal from the transmitter, the receiver shall be capable of indicating the close proximity of single or multiconductor cable faults of the following types:

(a) Grounded, open or shorted conductors

(b) High resistance faults (up to 500,000 ohms) between conductors or from one or more conductors to ground.

(c) Low resistance faults (100 ohms or less) between conductors or from one or more conductors to ground.

3.2.4.1 General characteristics.- In addition, the receiver shall also have the following characteristics:

(a) The circuitry shall employ solid-state devices where the commercial state-of-the-art is applicable.

(b) Capability of locating cable path and depth.

(c) Self-contained batteries with battery test switch and indicating meter.

(d) Tuned precisely to transmitter frequency. Effectively reject interference from 60 Hz and 60 Hz harmonics.

(e) Capability of measuring transmitter signal current in the earth from the cable fault.

(f) Capability of detecting transmitter signal at cable fault when no earth current flows from fault.

3.2.5 Instruction Books.- Two commercial quality instruction books shall be furnished with each complete fault locator unit which fully describe the equipment and, as a minimum, contain the following:

(a) Manufacturer's name and address
(b) General description
(c) Theory of operation
(d) Operating instructions
(e) Schematic diagram
(f) Replaceable parts list
(g) Maintenance instructions
(h) Photograph of equipment

4. QUALITY ASSURANCE PROVISIONS

4.1 Inspection.- Inspection tests of the faultfinder assemblies will be made by the contractor and witnessed by an FAA representative. If witnessing by an FAA representative is waived, the contractor shall furnish the Contracting Officer with certified data showing compliance of all units on order with this purchase description.

4.2 Tests.- All faultfinder assemblies on order shall be either field tested or a simulated field test made at the factory to demonstrate the capability of the units to comply with the requirements of paragraphs 1 and 3.

5. PREPARATION FOR DELIVERY

5.1 Packaging.- Commercial packing shall be used for shipment. When more than one unit is packed in a common container, each unit shall be so identified and packaged that repacking for reshipment will not be necessary.

5.2 Marking.- Each package shall be identified with the following markings:

(a) Manufacturer's name and address
(b) Contract number
(c) Cable faultfinder, transmitter (and/or receiver)

6. NOTES

6.1 None

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